

REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and in light of the following remarks and discussion.

Claims 30 and 54 have been amended to include the features of claim 40, namely that the roller element includes at least one gear wheel having teeth and at least one of the inner and outer upper lateral support members are provided with teeth which are complementary to the teeth on the gear wheel so that the displacement between the roller and the complementary bearing surfaces of the inner and outer lateral support members is by rolling. Claim 40 is cancelled without prejudice or disclaimer. Further, Applicant adds new claims 55-57. Accordingly, claim 30-38 and 41-57 are pending in the application, of which claims 35-38 and 40-54 are currently withdrawn from consideration. Support for the changes to the claims is self-evident from the originally filed disclosure, including the originally filed claims and drawings, and, therefore, no new matter is added.

In the Office Action¹, claims 30-33 were rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent GB 889,758 to Williams et al. ("Williams") in view of U.S. Patent No. 4,008,757 to Weatherford Jr. ("Weatherford") and U.S. Patent No. 5,772,420 to Holmes ("Holmes"). Claim 34 was rejected under 35 U.S.C. 103(a) as being unpatentable over Williams, Weatherford, and Holmes in view of British Patent

¹ The Office Action may contain a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the Office Action.

GB 808,739 to Crook ("Crook"). It is requested that the rejections be withdrawn and that the claims be allowed for at least the following reasons.

With respect to the obviousness rejection of claims 30-33, independent claim 30, as amended, recites a support arrangement comprising, among other features,

a single vertical support . . . including . . . upper and lower support members which are centrally positioned about the axis and are displaceable relative to one another, the upper and lower support members defining respectively downwardly and upwardly disposed contact surfaces through which the vertical loads are transmitted . . . [and]

lateral support means . . . including a plurality of circumferentially spaced upper lateral supports configured to provide lateral support to the core barrel at or towards an upper end thereof, each of which includes a set of inner and outer lateral support members connected to the core barrel at or towards the upper end thereof . . . and a roller element . . . the roller element including at least one gear wheel having teeth, and at least one of the inner and outer upper lateral support members being provided with teeth which are complementary to the teeth on the gear wheel so the displacement between the roller and complementary bearing surfaces of the inner and outer upper lateral support members is by rolling.

It is submitted that Williams, Weatherford, and Holmes, taken alone or in combination, fail to disclose or suggest at least these claimed features.

Williams discloses that a "core structure, generally indicated at 10, is mounted within a pressure vessel 11 on a support grid 12 which is in turn supported from the reactor foundations 13 through a cylindrical skirt 14." Col. 2, ll. 47-52. In Williams, "[t]he support grid is provided with rigid radial key members 15, spaced around its periphery, which project from a heavy ring member 16 forming part of the support grid. Each key member is arranged to slide between opposed bearing pads 17 mounted on the inside of pockets 18 formed in the pressure vessel." Col. 2, ll. 54-61.

The Office Action asserts that the upper and lower ends of Williams' cylindrical skirt correspond to the claimed single vertical support. Page 4. As shown in Fig. 2 of Williams, however, the cylindrical skirt constitutes a single base of integral construction (i.e., a single component) that supports the grid from the reactor foundation. Thus, Williams' cylindrical skirt cannot provide the claimed "upper and lower support members" (emphasis added), as it is only a single "piece."

The Office Action also asserts that Williams includes "lateral support means *capable* of providing support to the core barrel and including a plurality of circumferentially spaced upper lateral supports 20/19/17/15 each including a set of inner and outer lateral support members . . . connected to the core barrel 12 and pressure reactor vessel 11." Page 4.

Williams clearly indicates that the core structure is designated by reference numeral 10 and that reference numeral 12 is merely a support grid on which the core structure 10 is mounted and protrudes upwardly therefrom. See Williams Figure 1, Col. 2, ll. 47-53. Accordingly, by providing the lateral supports such that they support the grid 12 at a position below the lower end of the core structure 10, it is simply not possible for the lateral supports to be configured to provide lateral support to the core barrel at or towards an upper end thereof. The Examiner's reliance on Weatherford and Holmes fails to cure the deficiency of Williams with respect to the claimed lateral support.

Accordingly, Applicant respectfully submits that claim 30, as currently presented, is patentable over Williams.

Nevertheless, in order to further prosecution, claim 30 has been amended to state “the roller element include[s] at least one gear wheel having teeth, and at least one of the inner and outer upper lateral support members being provided with teeth which are complementary to the teeth on the gear wheel so that displacement between the roller and complementary bearing surfaces of the inner and outer lateral support members is by rolling.”

As discussed in the specification, such an arrangement will find application particularly in a high temperature gas cooled nuclear reactor. Such reactors typically use helium as the coolant. The provision of the teeth to ensure rolling of the roller is extremely important in the context of metal components operating in a helium environment since even a small degree of sliding between the components can lead to welding of the components to one another. ¶ 10.

It is respectfully submitted that none of the prior art of record discloses or even suggests that a physical arrangement, i.e. the complementary teeth, is provided to ensure that the components roll relative to one another and that they do not slide.

Accordingly, withdrawal of the rejection and allowance of independent claim 30 is respectfully requested. While of different scope than independent claim 30, amended independent claim 54 (withdrawn) is allowable over the prior art for at least similar reasons as independent claim 30. Furthermore, claims 31-38 and 41-53 are allowable over the prior art of record at least due to their dependence on independent claim 30, as well as for their uniquely recited features.

Also, claims 55 and 56, although different in scope than independent claim 30, are allowable over the prior art for at least similar reasons as independent claim 30 as well as for their uniquely recited features.

In particular, claim 55 recites that the “lateral support means includ[e] a plurality of circumferentially spaced upper lateral supports . . . each of which includes a set of inner and outer lateral support members . . . and a roller element sandwiched between the inner and outer lateral support members, wherein the bearing surfaces of the inner and outer upper lateral support members are inclined upwardly and outwardly relative to the axis of the core barrel.”

As discussed in the specification, the core barrel may experience an uneven temperature distribution. This can result in some lateral deformation of the core barrel, e.g. a slight bowing thereof. In addition, the core barrel is relatively long typically having a length of about 22 m and has a circumference of about 18 m. As a result, the expansion and retraction of the core barrel due to changes in temperature can be significant. The inclination of the bearing surfaces thereby automatically compensates for an increase in diameter as the length increases. ¶¶ 67-68.

Additionally, claim 56 recites that “the lateral support means includ[e] a plurality of circumferentially spaced upper lateral supports . . . each of which includes a set of inner and outer lateral support members [where] at least one of the inner and outer upper lateral support members of each set of inner and outer lateral support members being mounted on a resiliently deformable support.”

It is respectfully submitted that none of the prior art of record discloses or even suggests inner and outer lateral support members being mounted on a resiliently

deformable support. As described in the specification, when constructing a support arrangement for a nuclear reactor as described, it is important that relatively tight tolerances are maintained to ensure accurate location of the core barrel and the associated components within the pressure vessel. By making use of the resiliently deformable support, the claimed support arrangement can compensate for small misalignments during construction and also has a degree of inherent resilience should it be subjected to abnormal conditions such as a seismic event. ¶ 61.

A further benefit of the structure of the lateral support as claimed in claim 30, 54 and 55 is that, should the support arrangement be subjected to abnormal stresses such as during a seismic event, the risk that roller element will be dislodged from between the bearing surfaces is greatly reduced.

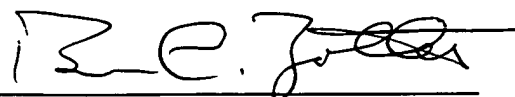
In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

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